Effective Date 08/07/06

WP 08-PT.02
Revision 5

Ten-Drum Overpack Handling and Operation Manual

Cognizant Department: _Packaging____

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1.0 SCOPE [1, 2, 3, 4]

This document provides an outline of recommended procedures for the safe handling, effective operation, and proper maintenance of the Ten Drum Overpack (TDOP).

2.0 GENERAL DESCRIPTION

The TRUPACT-II TDOP container is designed for use either with the TRUPACT-II Shipping Package or as a stand-alone U. S. Department of Transportation (DOT) 7A Type A packaging. The container was designed to hold drums, loose homogeneous materials, or one Standard Waste Box (SWB). The container is designed for a gross shipping weight of 6,700 lb. The maximum content net weight is approximately 5,000 lb.

The unit consists of a right circular cylinder main body. It has a flat top and bottom end, and a bolt on, continuous, gasket-sealed lid. Internal gas pressure is relieved by one to ten filters. The filters are installed in threaded ports in the body flange at the upper edge of the cylindrical body. Allowed payloads are as follows:

- Material Form No. 1: Solids - any particle size.
- Material Form No. 2: Solids - large particle size only (i.e., sand, concrete, debris, soil, etc.).
- Material Form No. 3: Solids - objects with no significant dispersible or removable contamination (see 49 CFR §173.443 in Subsection 3.1, U.S. DOT 7A Compliance Documents).
- Material Form No. 4: Solids as described in Form 3 above, including large bulky, dense objects with sharp and obtrusive members of components, but having Form 1 and/or 2 as dispersible contaminants associated with the material (e.g., steel plates, motors, valves, steel pipes, concrete blocks, etc.).
- Material Form No. 5: Drums and other packagings in any arrangement within gross weight limitations or other large bulky objects(s) with dunnage.

3.0 REFERENCE DOCUMENTS

The following documents apply to performing various handling and maintenance activities. These documents shall be referred to during the applicable operations of this procedure.

3.1 U.S. DOT 7A Compliance Documents

- Title 49 of the *Code of Federal Regulations* (CFR),§173.443, Contamination Control
- 49 CFR §178.350, Specification 7A; General Packaging, Type A; and §173.474, Quality Control for Construction of Packaging
- DOE/RL-96-57 (Volumes 1 and 2), *Test and Evaluation Document for the U.S. Department of Transportation Specification 7A Type A Packaging*

3.2 WTS/WIPP Construction Drawings and Specifications

- Drawing No. 165-F-010: TRUPACT-II TDOP Assembly
- Drawing No. 41-L-004: TDOP Lift Fixture Adaptor
- Drawing No. 165-F-001: Standard Waste Box Assembly (SWB)
- E-I-430, Specification for Fabrication of the Ten Drum Overpack

3.3 WIPP Shipment Compliance Documents

- USA/9218/B(U)F, TRUPACT-II Certificate of Compliance for Radioactive Materials Packages
- DOE/WIPP 02-3122, *Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*
- Minimum Filter Vent Specifications - Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC), Subsection 2.5.
- Payload Configurations - Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC), Section 2.9.9.

4.0 SAFETY PRECAUTIONS

4.1 General Safety Precautions

Only allowed DOT 7A payloads are to be transported in TDOP(s) when they are used as DOT 7A containers. During use and handling of the packaging, proper safety precautions must be observed. Precautions include, but are not limited to the following:

- No structural modifications shall be made to the container.
- If hardware replacement is required, use hardware specified on the assembly/manufacturing drawing.

- When lifting and handling the container, closely follow the procedures and recommendations in this document.
- Keep all personnel clear of the work area while the container is being lifted or moved.
- **DO NOT** use the packaging to store, contain, or transport cargo other than the cargo for which the packaging was designed.
- Only qualified personnel shall be permitted to handle, rig, transport, or otherwise use the packaging. The user shall be responsible for deciding who is qualified.
- Use only recommended, or Washington TRU Solutions LLC (WTS) engineering approved, solvents for the removal of gasket adhesives, and ensure they are site-approved products. Follow the solvent manufacturer's health and safety guidelines for the use of their product, as well as all site-specific health and safety guidelines.
- TDOPs should be stored indoors whenever possible. If outdoor storage is unavoidable, then the TDOPs should be covered and stored on blocks to prevent rusting and the ingress of water. In addition, at least one of the filter ports should be vented (in a way which precludes the ingress of water and debris) to prevent bulging due to internal pressurization induced by a rise in temperature.

4.2 Warnings

Detailed safety warnings are used to promote personnel safety and are denoted by the prefix **WARNING**. Such warning statements and procedures shall be followed. A **WARNING** means **FAILURE TO HEED SUCH PROCEDURES COULD RESULT IN SERIOUS PERSONNEL INJURY**.

4.3 Cautions

Cautions before a step are denoted by the prefix **CAUTION**. Cautions alert personnel that a failure to comply with the caution **COULD RESULT IN DAMAGE TO CONTENTS OR PACKAGING**.

5.0 PRELOADING TOOLS, SUPPLIES AND SPARE PARTS

The following items may be either manual tools or service powered devices. The user shall verify, or show evidence, that the units used meet the capability and stated certification requirements using the user facility tooling procedure requirements.

5.1 Recommended Tools (Commercially Available)

- 5/16-in. Long arm hex key
- 9/16-in. Long arm hex key
- 5/16-in. Hex bit drive socket
- 9/16-in. Hex bit drive socket
- 6 or 12-point socket (for filter installation)
- Ratchet drive wrench
- Calibrated torque wrench
- Lineup bar (bull or drift pin) with about a 3/8-in. rounded point
- Swivel hoist ring for lid lift: 1/4-20 UNC X 0.29-in. (+/- .01-in.), available from:

  Actek
  17181 Gale Avenue, Unit C
  City of Industry, CA 91745
  (800) 752-7229 or (626) 581-3424,
  part No. 46100, special ordered with 0.29-in. (+/- .01-in.) thread length;

  or

  Reid Tool
  2256 Black Creek Road
  Muskegon, MI 49444-2684
  phone (800) 253-0412 or (231) 777-3951
  catalog No. SHR-23050 or equivalent, special ordered with 0.29-in. (+/- .01-in.) thread length. (Note site rigging requirements when ordering.)

5.2 Recommended Spare Parts (Available from Seller)

- Cap screws
- Gasket assemblies
- Pipe plugs
- Touch-up paint
- Spacer rings

5.3 Recommended Supplies (Commercially Available)

NOTE
Socket Flat Head Cap Screws (SFHCS) - A non-locking liquid anaerobic thread sealant is the preferred product type for sealing the ½-in.13 SFHCS. This product type provides the necessary seal while allowing the SFHCS to be removed if necessary. If the SFHCSs are **NOT** to be removed, then a locking thread sealant is acceptable.

NOTE
Filter and Pipe Plug - For sealing the threads of the filter and pipe plug, a thread sealant tape or compound is recommended. However, a liquid anaerobic thread sealant is acceptable.

- Thread Sealant

5.4 Recommended Approved Filters (Supplied by User or Shipper)

Minimum Filter Vent Specifications - Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC), Subsection 2.5.[5]

6.0 HANDLING PREREQUISITES

6.1 Pre-Use Inspection

Ensure each serial numbered TDOP is traceable to the seller's Certificate of Compliance © of C) required by specification E-I-430. Inspect the TDOP for any major damage (significant deformation, punctures, tears, corrosion, etc.), which would render the TDOP unuseable. If major damage is found, the user shall not use the TDOP.

Ensure all assembly components are present: body assembly (1 each), lid assembly (1 each), gasket assembly (1 each), pipe plugs (9 each), and cap screws (36 each).

6.2 Prerequisite Actions

6.2.1 Remove the TDOP lid screws and lid. Inspect the 36 flange threads for damaged threads.

6.2.2 At any time during the performance of this procedure, if any threads have minor thread deformation, or foreign material (burrs, cross thread, weld spatter, etc.), the user may correct the irregularity by using the appropriate thread tap on the threads.

7.0 LIFTING AND HANDLING

The following methods shall be used while handling packaging.

7.1 Overhead Lifting

The packaging is designed to be lifted by several methods:

- Crane/hoist with slings
- TDOP lift fixture adapter (Reference Subsection 3.2, WTS/WIPP Construction Drawings and Specifications), coupled to the Adjustable Center of Gravity Lift Fixture (ACGLF)
- A forklift

In all cases, the user shall be responsible for ensuring the method of lifting is fit and safe for the intended operation. Subsections 7.2, Slings, 7.3, TDOP Lift Adapter/ACGLF, and 7.4, Forklifts, contain instructions for each lifting method.

7.2 Slings

When using slings, the slings and rigging arrangement shall be capable of a vertical lift of a minimum of 6,700 lb. Lifting devices shall be appropriately rated. They shall be tested for a minimum of 6,700 lb maximum gross weight.

7.2.1 To lift the container using slings, use a sling rigging that has a flat J-hook on one end of the sling. Three sling assemblies are needed. Verify the flat J-hook catches under **AND** secures onto the lift clips on the top edge of the container.

7.2.2 Secure the other end of each sling assembly to the lifting apparatus (e.g., hoist or crane hook).

7.2.3 Lift the container a few inches to ensure all rigging connections and/or attachments are satisfactory.

WARNING

Failure to verify by a short test lift that all rigging and attachments are adequate before lifting the container to the transport height could result in serious personnel injury.

WARNING

Failure to keep all personnel away from the work area near the container while the container is off the ground could result in serious personnel injury.

CAUTION

Abrupt stops while lowering the container MUST be avoided.

7.2.4 After checking that all rigging is secure, lift the container gently to the required transport height. When lowering the container, do it gently.

7.3 TDOP Lift Adapter/ACGLF

For lifting operations using the TDOP Lift Adapter/ACGLF combination, use the ACGLF operating manual for specific instructions.

7.4 Forklifts

As an option, a forklift vehicle can be used to lift or move the packaging. A forklift can be used **IF** the container is on blocking that allows the forklift tines to be put under the unit. The forklift may also be equipped with a push-pull handling device to handle the TDOP with a slip sheet.

Forklifts shall be appropriately rated and tested for a minimum of 6,700 lb maximum gross weight on a 36-in. load center for lifting loaded TDOPs.

7.4.1 To lift the container, place the forklift tines or slip sheet support plate under the packaging. Place the tines on support plate so they have a full support under the container.

WARNING

Failure to ensure full lateral support of the container could cause container damage and/or personnel injury.

7.4.2 Lift the container just enough to ensure that the forklift can initiate a **BALANCED** lift. If the lift is not **BALANCED**, gently lower the container back on the blocking supports. Then adjust the support as needed. Repeat Steps 7.4.1 and 7.4.2 to achieve a **BALANCED** lift.

WARNING

Failure to ensure full lateral support of the container could cause container damage and/or personnel injury.

7.4.3 After achieving a **BALANCED** lift, tilt the mast gently toward the forklift cab. Then, lift the container to the desired transport height.

7.5 Lid Removal

7.5.1 Using a 5/16-in. hexagon wrench, loosen all cap screws and remove them. Place the cap screws where they will not be damaged or lost.

WARNING

Failure to ensure that the swivel hoist ring is properly installed in the lid lift nut could cause packaging damage and/or personnel injury. Washers **MUST NOT** be installed on the swivel hoist ring bolt.

7.5.2 Insert a 1/4-20 UNC-2A X .29-in. long swivel hoist ring in the lid lift nut. Tighten the swivel hoist ring shoulder flush against the lid ensuring that full thread engagement is achieved.

7.5.3 Torque swivel hoist ring as required by manufacturer.

7.5.4 Attach suitable rigging, capable of lifting 300 lb, to the swivel hoist ring.

WARNING

Pinch points are present between lid and body. In order to avoid injury, hands and fingers must be kept clear of these areas.

7.5.5 Lift the lid carefully and slowly upward/off and clear of the body flange.

NOTE

The lid removal operation may require some added removal manual prying forces at the lid flange edge. This is needed due to the inherent nature of the thin lid panel to deflect upward at the center during the initial lid lifting operation. At the same time that force is applied to the lid with the crane, pry the lid upward enough in at least two places (about 180 degrees apart), so that the spacers clear the body flange counterbores.

Without this lid removal manual assistance, the lid lift forces may detach the spacers from the lid counterbores.

CAUTION

It is recommended that the lid be placed on suitable support blocking to prevent contact of the lid flange with the ground or floor. This will preclude damage to the edge of the lid that forms a gasket sealing surface.

CAUTION

Abrupt stops while lowering the lid **MUST** be avoided.

7.5.6 Set the lid in a place to avoid damage to the lid, the gasket seal or spacers.

7.6 Installation of Vent Filters and Plugs

NOTE

Two different manufacturing options exist for the TDOP filter ports. One is a 3/4-in. NPT pipe coupling (tapered thread) the other is a 3/4-in. NPS tapped hole (straight thread). The use of filter gaskets is optional. The TDOP relies on the mechanical interface of the pipe threads with a thread sealant to create a leak-tight joint, regardless of the filter port thread type.

7.6.1 If the contents of the TDOP **DO NOT** have the potential for flammable gas generation and the TDOP is **NOT** used in the TRUPACT-II, at least one filter shall be installed. The unused filter ports shall be sealed with 3/4-in. NPT socket recessed pipe plugs.

7.6.2 The quantity of filters installed, from one to ten will be governed by the usage requirements (CH-TRAMPAC Subsection 2.5).[5] Install filters as follows:

a. Apply a generous amount of pipe thread sealant compound or sealant tape to the threads of the filter.

b. Install filter into the threaded port of the body flange. Hand-tighten until the filter is securely seated. If the filter port has a tapered thread, the filter will likely become hand-tight before the filter body contacts the TDOP body. This is an acceptable condition.

c. Torque the filter to 10 lb-ft, (+/- 5 lb-ft) using a 1-1/2-in. hexagon socket.

7.6.3 The remaining couplings/ports not containing filters must be plugged. Before installing the plug(s), apply a generous amount of pipe thread sealant compound or sealant tape to the threads of the plug. Use a 3/4-in. NPT socket pipe plug and install them from the **OUTSIDE**.

7.6.4 Install the pipe plug(s) into the couplings/ports and torque to 10 lb-ft, (+/- 5 lb-ft).

7.6.5 Remove all excess pipe plug sealant from the exterior and interior of the container.

7.7 Lid Installation

7.7.1 Verify the lid flange gasket seating area, is clean, free of dirt, foreign particles, or other contaminants. Refer to Step 9.2.3 if the use of a solvent is necessary to obtain a clean surface.

7.7.2 Retrieve the gasket from the interior of the TDOP. The gasket, with a removable protective tape covering the self-adhesive surface, is supplied as a continuous circular ring, or in sections. The spacer holes are pre-punched for installation on the lid (Dwg. 165-F-010, Item 15).

7.7.3 Place the gasket in a circle around the lid gasket sealing area with the self-adhesive/protective tape next to the lid surface and spacers. Ensure gasket holes line up with lid spacers and gasket joints fit together properly. Minor adjustments to gasket may be made if necessary by trimming excess material. Gaps up to 1/4-in. may be filled in accordance with Subsection 9.5, Lid Gasket Repair.

7.7.4 Remove several feet of the self-adhesive protective tape from under the gasket. Begin placing the gasket over the spacers with the adhesive coming in contact with the lid gasket sealing surface between spacers. Maintain a 1/8-in. annular gap between the gasket outer diameter and the inside surface of the lid flange.

7.7.5 Repeat Step 7.7.4. Gently adjust the lid until the gasket is completely installed on the lid gasket sealing surface.

7.7.6 Verify the gasket final installation to assure the gasket and lid sealing surfaces are clean, free of dirt, foreign particles, or other contaminants.

WARNING

Failure to ensure that the swivel hoist ring is properly installed in the lid lift nut, could cause packaging damage and/or personnel injury. Washers **MUST NOT** be installed on the swivel hoist ring bolt.

7.7.7 Insert a 1/4-20 UNC-2A X .29-in. long swivel hoist ring in the lid lift nut. Tighten the swivel hoist ring shoulder flush against the lid ensuring that full thread engagement is achieved.

7.7.8 Torque swivel hoist ring as required by manufacturer.

7.7.9 Attach rigging, capable of lifting 300 lb, to the swivel hoist ring.

7.7.10 Lift the lid above the container. Center the lid so that the lid alignment stripe is positioned over the mating stripe on the body flange.

WARNING

Pinch points are present between lid and body flange. Keep fingers clear.

7.7.11 Lower the lid slowly onto the body flange. Manually guide the lid so the spacers are aligned to enter the mating counter bore receptacles of the body flange.

7.7.12 Continue to lower the crane/hoist until the full weight of the lid to seat the lid gasket down onto the body flange (the spacers will have entered the body flange counterbores).

NOTE

If some of the spacers do not go into the body flange counterbores, it may be necessary to pry the lid upward (while lifting with the crane), until it is free before lowering it down on the body flange again. If the spacers still do not go into the counterbores, it may be necessary to repeat Steps 7.7.11 through 7.7.12. If spacers become detached from the lid, they must be reattached according to the TDOP fabrication drawing requirements (Dwg. 165-F-010).

7.7.13 Insert all 36 hex socket button head cap screws into the lid perimeter counterbored holes, through the spacers. Thread the cap screws into the body flange. Tighten all cap screws finger tight (the button head cap screw under-head surface shall contact the bottom of the lid hole counterbore).

7.7.14 In a manner that will ensure even compression of the lid gasket, (such as an alternating sequence, criss-cross or star pattern), tighten all cap screws approximately one and one half revolution, or until the torque value (50 lb-ft +5,-0 lb-ft) is achieved.

7.7.15 Torque all cap screws to 50 lb-ft, (+5,-0 lb-ft), if not completed in previous step.

7.7.16 Remove the lid lift rigging and swivel hoist ring.

7.7.17 Apply a tamper indicator seal or other device between the lid and body flanges, when a tamper indicator is required.

7.8 Securing Container to a Conveyance Vehicle

The TRUPACT-II TDOP Container, when used as a stand-alone packaging, works well with most conveyance vehicles. The following steps describe how the packaging may be loaded and secured to a conveyance vehicle. The user shall be responsible for ensuring the methods and equipment are fit for the intended purpose and meet applicable DOT requirements for over-the-road transport.

7.8.1 Lift the container into position onto the conveyance vehicle according to Subsection 7.1, Overhead Lifting.

7.8.2 Find and install wood or other material to prevent longitudinal or lateral movement of the packaging.

7.8.3 Secure the packaging to the vehicle with webbing or other suitable rigging as described in Section 7.0, Lifting and Handling. The rigging must be anchored to the packaging by the lift clips at the top edge of the packaging.

7.8.4 Verify that all rigging and equipment are secure before shipment.

8.0 PAYLOAD HANDLING/LOADING

The following steps shall be followed in loading the TDOP with drums or a (SWB) payload. The lid removal of the TDOP is done as stated in Subsection 7.5, Lid Removal. All payload configurations must comply with the Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC), Section 2.9.9.

8.1 55-Gallon Drums

8.1.1 The first five drums of a 55-gallon drum load shall be placed in the TDOP in a circular array of five drums on the bottom end panel. Each drum lid closure band draw bolt can be in any rotational orientation with respect to the TDOP center and/or body (the drum closure draw bolt does not have to be inboard).

8.1.2 Place the five heaviest drums on the bottom panel (layer) of the TDOP before more drums are placed on top of the first layer.

8.1.3 Place the next 55-gallon drums (≤ five) on top of the lower tier drums. A maximum of ten 55-gallon drums can be loaded.

8.1.4 Reinstall the TDOP lid as instructed in Subsection 7.7, Lid Installation.

8.2 85-Gallon Drums

8.2.1 The first four 85-gallon drums shall be placed vertically on the bottom of the TDOP.

8.2.2 Two additional 85-gallon drums can be placed horizontally on top of the lower tier drums.

8.2.3 Reinstall the TDOP lid as instructed in Subsection 7.7.

8.3 Standard Waste Box

Only one SWB (Dwg. 165-F-001) shall be loaded for transport per TDOP. The SWB must be placed in the TDOP with prefabricated dunnage materials. The dunnage materials must be partially installed in the TDOP interior **BEFORE** installing the SWB in the TDOP.

The dunnage installation must be used with the TDOP for all SWB transports. Sketches of the dunnage material requirements and installation are included in Appendix A as Figures 1-6.

8.3.1 Review Figure 1 to decide the type of dunnage needed and how the dunnage will be placed in the TDOP.

8.3.2 Fabricate the upper and lower dunnage assemblies as shown in Figures 4 and 5.

8.3.3 Place the lower dunnage assembly in the bottom of the TDOP. Install the sidewall dunnage components and upper sidewall dunnage assembly as shown in Figure 4.

8.3.4 The SWB is loaded in the TDOP as illustrated in Figures 2 and 3.

- The SWB may be installed horizontally by placing the TDOP on its side such that a forklift can be used to insert the SWB into its position against the bottom dunnage support against the TDOP bottom pan.

- The SWB may be installed into the TDOP in the vertical position with the use of a crane, by rigging the SWB with temporary slings. The slings suspend the SWB with the long axis vertical. The SWB can then be lowered into the TDOP. The sling rigging must take into account the need to be able to remove the slings if the loading facility wishes to retain the slings at their facility after the SWB TDOP loading.

8.3.5 Place the upper dunnage assembly over the SWB at the top of the TDOP as shown in Figures 2, 3, and 6.

8.4 Reinstall the TDOP lid as instructed in Subsection 7.7.

NOTE
If the TDOP has been loaded in the horizontal position, it may be necessary to place the TDOP body assembly in the vertical/upright position. This will minimize misalignment between the body flange counterbores and the lid spacers.

9.0 MAINTENANCE, INSPECTION AND REPAIR

Subsection 9.1, Maintenance and Inspection, shall be done each time the TDOP lid is installed. Subsection 9.2, Lid Flange Sealing Gasket Replacement, gives instructions for the replacement of the lid sealing gasket. Subsection 9.3, Lid Flange Sealing Gasket Fabrication, gives instructions for the field fabrication of the lid sealing gasket. Subsection 9.4, Lid Flange Spacer Replacement, gives instructions on replacing the Lid Flange Spacer. Subsection 9.5, gives instructions on repair of the Lid Gasket. (Refer to Dwg. 165-F-010 for location of indicated item parts.)

9.1 Maintenance and Inspection

During the inspection of the container, if defective parts or components are found, they must be replaced using original specification materials and requirements to maintain DOT-7A certification. In such cases, contact the manufacturer for replacements.

9.1.1 Inspect all lift clips and the lift nut in the lid for damage or signs of fatigue. Replace the item(s) if such signs are found. Contact the manufacturer for correct replacement procedures.

9.1.2 Inspect the lid closure cap screws for signs of fatigue or damage. Replace as needed.

9.1.3 Inspect the lid gasket. Replace it with a new gasket if the gasket is damaged or shows signs of deformation or deterioration. Before loading waste into container, either verify that the gasket shelf-life has not expired or replace gasket. (See Subsection 9.2.)

9.1.4 Verify the body flange gasket sealing surface is clean, and free of dirt, foreign particles, or other contaminants. Clean if needed. Refer to Subsection 9.2.3 if the use of a solvent is necessary to obtain a clean surface.

9.1.5 Inspect all carbon filters and pipe plugs for damage and adequacy of tightness. Verify torque of all filters and plugs is 10 lb-ft, +/- 5 lb-ft.

9.1.6 Inspect all interior and exterior surfaces of the TDOP for signs of damage or distortion. If damage is found that could affect the containment integrity of the packaging, contact the manufacturer.

NOTE

Touch-up paint may be applied to areas with minor surface corrosion that have been determined as NOT having an effect on the integrity of the packaging. The manufacturer should be contacted for recommended procedures.

9.1.7 Inspect all interior and exterior surfaces of the TDOP for signs of corrosion. If signs of corrosion that could impair the containment are found, tag or label the unit as unusable and segregate away from conforming units. Refer to Section 10.0 for disposition.

9.1.8 Inspect the condition of all sealant applied to the upper and lower corners where the bumper tubes rest against the body side panels. If sealant removal and re-application are required, clean the affected area and reapply sealant as needed.

9.1.9 Verify the container identification serial number is in place and in good condition.

9.2 Lid Flange Sealing Gasket Replacement

9.2.1 Remove the lid according to Subsection 7.5. Place the lid upside down on a workbench or other supports. This provides proper access to the gasket area of the lid assembly.

9.2.2 Remove the old gasket manually by stripping the gasket from the lid flange and spacers.

9.2.3 Clean the lid flange gasket seating area as follows:

a. Remove any residual gasket components or adhesive using a flexible spatula, putty knife or similar tool.

b. Apply a light coat of low intensity cleaning solvent, such as denatured alcohol or a general purpose adhesive remover containing a near equal mixture of Naphtha and Xylene. Adhesive remover of this type is commonly available at automotive parts stores. Use of acetone or other strong solvents is to be avoided as it will remove the paint/coating.

CAUTION

Extended use of a more aggressive solvent may degrade the adhesive attachment of the spacers installed in the underside lid counterbores.

| 9.2.4 Obtain a new gasket. The new gasket, with a removable protective tape covering the self-adhesive surface, is supplied as a continuous circular ring, or in sections. The spacer holes are pre-punched for installation on the lid (Dwg. 165-F-010, Item 15).

9.2.5 Place the gasket in a circle around the lid gasket sealing area with the self-adhesive/protective tape next to the lid surface and spacers. Ensure gasket holes line up with lid spacers and gasket joints fit together properly. Minor adjustments to gasket may be made if necessary by trimming excess material. Gaps up to 1/4-in. may be filled in accordance with Subsection 9.5.

9.2.6 Remove several feet of the self-adhesive protective tape from under the gasket. Begin placing the gasket over the spacers with the adhesive coming in contact with the lid gasket sealing surface between spacers. Maintain a 1/8-in. annular gap between the gasket outer diameter and the inside surface of the lid flange.

9.2.7 Repeat Step 9.2.6. Gently adjust the lid until the gasket is completely installed on the lid gasket sealing surface.

9.2.8 Verify the gasket final installation to assure the gasket and lid sealing surfaces are clean, free of dirt, foreign particles, or other contaminants.

9.3 Lid Flange Sealing Gasket Fabrication

This subsection provides field instructions to fabricate a replacement gasket.

Refer to Dwg. 165-F-010 for indicated items/note.

9.3.1 Obtain the required gasket material shown as Item 15.

9.3.2 Obtain the required gasket joint splicing adhesive material shown as Item 19.

9.3.3 Punch holes in the gasket for the spacers as shown on the Item 15 gasket detail.

9.3.4 Place the gasket material into a flat circular shape. Do not allow the gasket to become twisted: keep the self-adhesive protected surface on the same gasket surface side. Ensure the end with the 2-3/4-in. dimension is overlapped by the other gasket end excess length segment.

9.3.5 Place the gasket ends to achieve the proper gasket splice joint hole spacing as described per Drawing Note 9. Cut off the gasket end excess length with a matching chamfer cut. The only overlap is to be at the chamfered ends. This provides smooth, flat sealing surfaces for the body flange and lid flange.

9.3.6 Review the adhesive manufacturer's application and safety instructions. Apply the adhesive on the gasket chamfered ends. Then complete the gasket joint splice connection.

9.3.7 Allow the adhesive to cure for the time indicated on the manufacturer's instructions. Then complete the installation of the gasket on the container lid.

9.4 Lid Flange Spacer Replacement

This subsection provides field reinstallation instructions for a spacer that has become detached from the lid flange counterbores. Review the spacer bonding adhesive manufacturer's application and safety instructions. Follow manufacturer's requirements for any special process application requirements such as ambient temperature requirements for proper curing.

9.4.1 Remove the lid according to instructions of Subsection 7.5. Place the lid upside down on a workbench or other supports. This provides proper access to the spacer and gasket area of the lid assembly where a replacement spacer is to be reinstalled.

9.4.2 Remove the lid seal gasket manually by carefully stripping the gasket from the lid flange area of the affected spacer.

9.4.3 Apply solvent (LOCTITE Chisel™ #790 Gasket Remover or equivalent), to the spacer bonding material in the lid counterbore where spacers have become detached.

9.4.4 Clean the lid flange spacer counterbore seating area by removing any residual bonding adhesive. Use a flexible spatula, putty knife, or similar tool. Apply a small amount of a low intensity solvent in accordance with Subsection 9.2.3.

CAUTION

Solvents **MUST NOT** be applied to the bonding adhesive of any currently attached adjacent spacers installed in the lid counterbores.

9.4.5 Clean the replacement spacer non-chamfered end surface and outer cylinder area that mates with the lid counterbore seating area. Remove any residual bonding adhesive. Use a flexible spatula, putty knife, or similar tool. Apply a small amount of a low intensity solvent in accordance with Subsection 9.2.3.

NOTE

For LOCTITE 680, the manufacturer recommends 24 hours of curing time for the bonding adhesive to reach full strength. Curing time may be reduced by using Activator 7471 per the manufacturer's instructions, or by increasing the temperature of the parts being bonded. The manufacturer's technical data sheet should be referred to for specific information.

9.4.6 Apply a thin bead of the spacer bonding adhesive to the face and wall surfaces of the applicable lid counterbore. Follow the adhesive manufacturer’s process instructions.

9.4.7 Insert the spacer non-chamfered end into the lid counterbore recess until the spacer is placed fully within/against the counterbore face. Remove any excess adhesive from the inner diameter of the spacer and/or the lid counterbore through the hole.

9.4.8 The spacer bonding adhesive must cure for the manufacturer’s recommended time before moving the lid from its upside down position.

9.4.9 Reinstall the existing replacement gasket in the spacer or install a replacement lid gasket as applicable following the instructions of Subsection 9.2.

9.5 Lid Gasket Repair

The lid gasket may be repaired using an RTV Silicone Gasket maker material (recommend LOCTITE 598). The gasket maker material may also be used to fill gaps in the gasket material up to the manufacturers recommended gap, but not to exceed 1/4-in.

10.0 USER QUALITY ACCEPTANCE CRITERIA

If the requirements/criteria of Subsection 9.1 are **NOT** met, the user shall perform the corrective action(s) below following the user's Quality Assurance procedures.

10.1 Nonconformance Report

A document that identifies and records a nonconforming condition and the action taken for the disposition of the nonconformance. Disposition of nonconforming items include review, accept, reject, rework, use-as-is, or repair using approved instructions.

10.2 Uncorrectable Conditions

Conditions found during visual inspection of the TDOP in Subsection 9.1 that are **NOT** correctable shall be documented on a Nonconformance Report (NCR) and dispositioned following user's NCR procedures before the next use of the packaging.

APPENDIX A - SWB DUNNAGE COMPONENTS & INSTALLATION

Figure 1. Dunnage Assembly Bill of Material And Notes

GROUP & QTY REQD						BILL OF MATERIAL		
GR 4	GR 3	GR 2	GR 1	NOTE	ITEM	PART NAME / DESCRIPTION	Part No. or Ref. Dwg.	Material / Spec
			2		1	ROTATION STABILIZER 4 X 4 X 56 LG	3SBDUN2	Constr. Grade
			1	6	2	UPPER POSITION BRACE 1 X 6 X 66 LG	3SBDUN2	Constr. Grade
			1		3	LOWER POSITION BRACE 1 X 6 X 64	3SBDUN2	Constr. Grade
			AR	4	4	SCREWS-BUGLE HEAD ½ X 3 LG	-	Commercial Grade
1			-		5	UPPER DUNNAGE ASSEMBLY	3SBDUN3	-
					6			
					7			
		2			8	ROTATION STABILIZER 4 X 4 X 56 LG	3SBDUN2	Constr. Grade
		1		6	9	UPPER SIDEWALL BRACE 1 X 6 X 57	3SBDUN2	Constr. Grade
		1			10	UPPER POSITION BRACE 1 X 6 X 65 LG	3SBDUN2	Constr. Grade
		1			11	LOWER POSITION BRACE 1 X 6 X 65 LG	3SBDUN2	Constr. Grade
		1			12	LOWER SIDEWALL BRACE 1 X 6 X 57 LG	3SBDUN2	Constr. Grade
		AR		4	13	SCREWS-BUGLE HEAD ½ X 3 LG	-	Commercial Grade
1		-			14	LOWER DUNNAGE ASSEMBLY	3SBDUN4	
					15			
					16		-	
	AR			2	17	ANGLE FASTENERS	3SBDUN4	16 Ga or Commercial
	AR			2	18	FLAT FASTENERS	3SBDUN6	16 Ga or Commercial
	AR				19	SCREWS-BUGLE HEAD 3/8 X 3/4 LG	-	Commercial Grade
	4			7	20	SIDEWALL SPACER 2 X 6 X 68 LG	3SBDUN2	Constr. Grade
	1				21	SIDE BRACE-TOP 2 X 6 X 49 LG	3SBDUN2	Constr. Grade
	1				22	SIDE BRACE-BOTTOM 2 X 6 X 49	3SBDUN2	Constr. Grade
	2				23	SIDE BRACE-SIDES 2 X 6 X 34	3SBDUN2	Constr. Grade
1	-			5	24	SIDEWALL DUNNAGE ASSEMBLY	3SBDUN5 & 6	-
-					25	COMPLETE DUNNAGE ASSEMBLY	3SBDUN1	-

NOTES

1. Applicable Drawings Include: 165-F-010 - TRUPACT-II Ten Drum Overpack Assembly
   165-F-001 - Standard Waste Box
2. Locations and sizes of joining strips and angles are approximate. Adjustments may be made as needed. Commercially available joining strips may be used or joining strips may be fabricated per applicable figures.
3. Lower dunnage assembly (GR 4) should have outer edges rounded with hammer blow to fit radiused bottom of TDOP.
4. Screw 1 X 6s (Items 2, 3, 9, 10, 11 & 12) to 4 X 4s (Items 1 & 8) using bugle-head screws (Items 4 & 13) - Drilling pilot holes is recommended.
5. Use of bracing (Items 18, 21, 22, & 23) for sidewall dunnage on the bottom of the TDOP is optional.
6. Clearly identify (Paint or Marker) position for "SWB TDOP" so that the SWB will be installed with the upper rolling ring above items 2 & 10 of upper and lower dunnage.
7. Adjust height of item 20 as needed to fit between top of lower dunnage assembly (GR 2) and the 1-½ X 3-in. flange for the TDOP closure.
8. Dunnage is to be assembled as follows:
   a. Upper and lower dunnage (GR 1 & GR 2), may be assembled outside of the TDOP
   b. Place TDOP on its side and secure it with wheel chocks (or other devices) to secure it from rolling.
   c. Install lower dunnage assembly (GR 2)
   d. Place cross braces for sidewall dunnage (Items 21, 22, & 23), in position before vertical members (Item 20), are installed - because of close fit.
   e. Install sidewall dunnage.
   f. Fasten with joining strips.

Figure 2. Dunnage Assembly with TDOP and SWB, Part 1

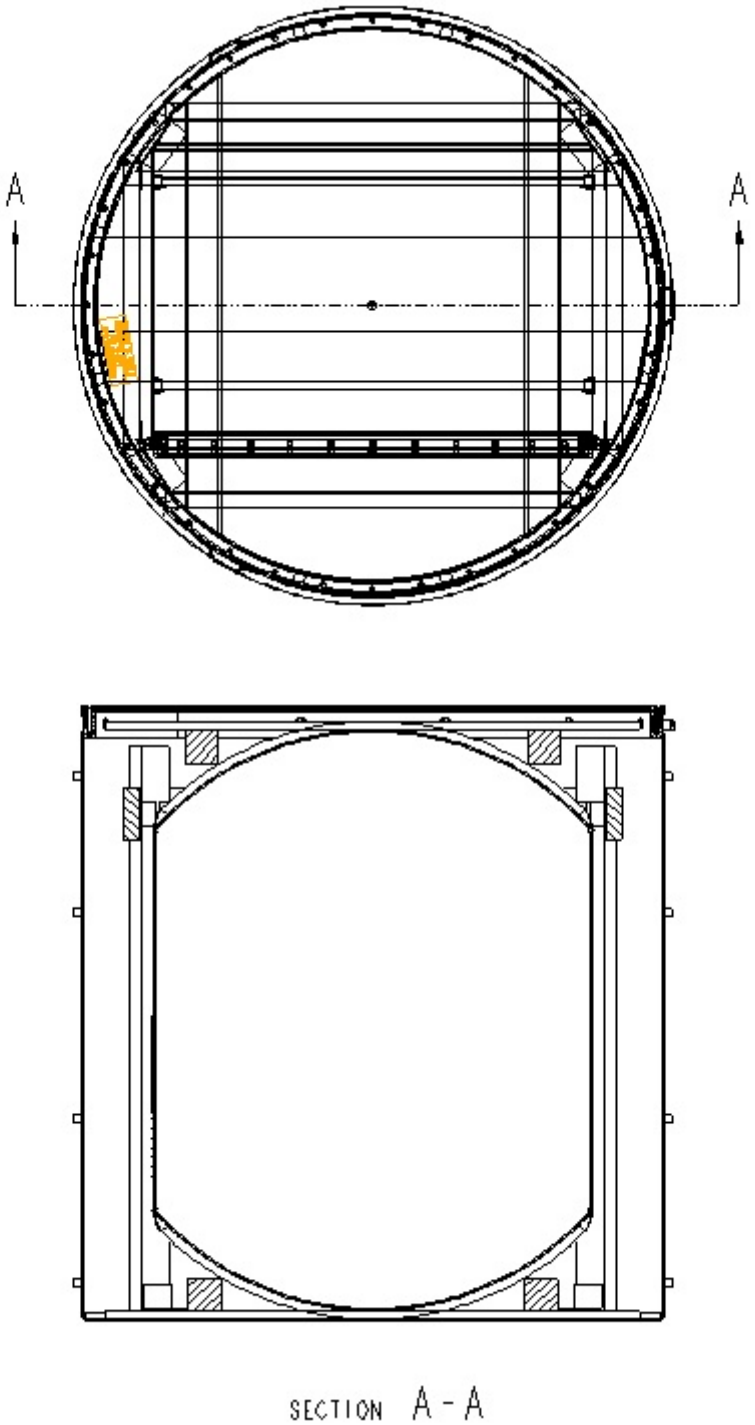


Figure 3. Dunnage Assembly with TDOP and SWB, Part 2

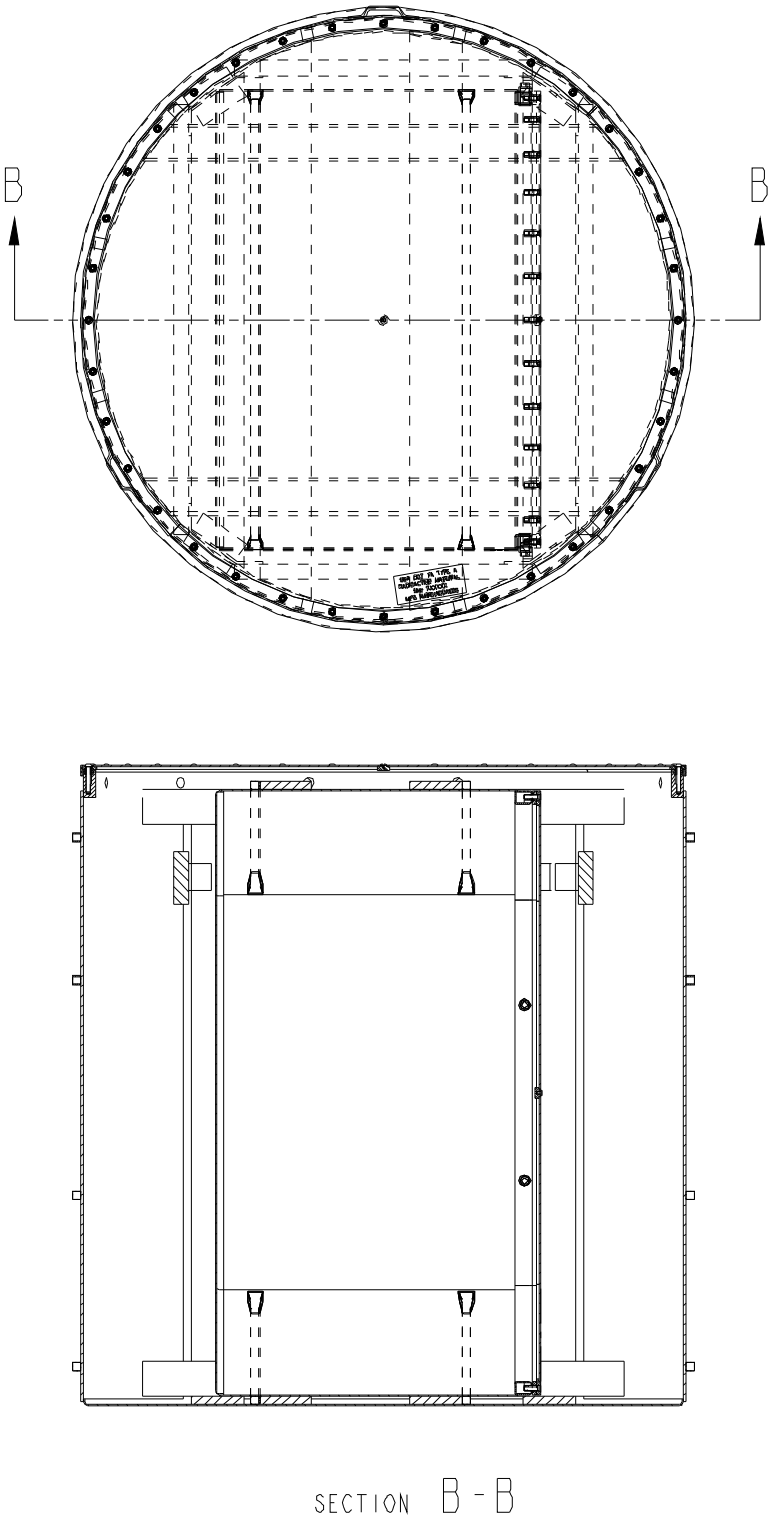
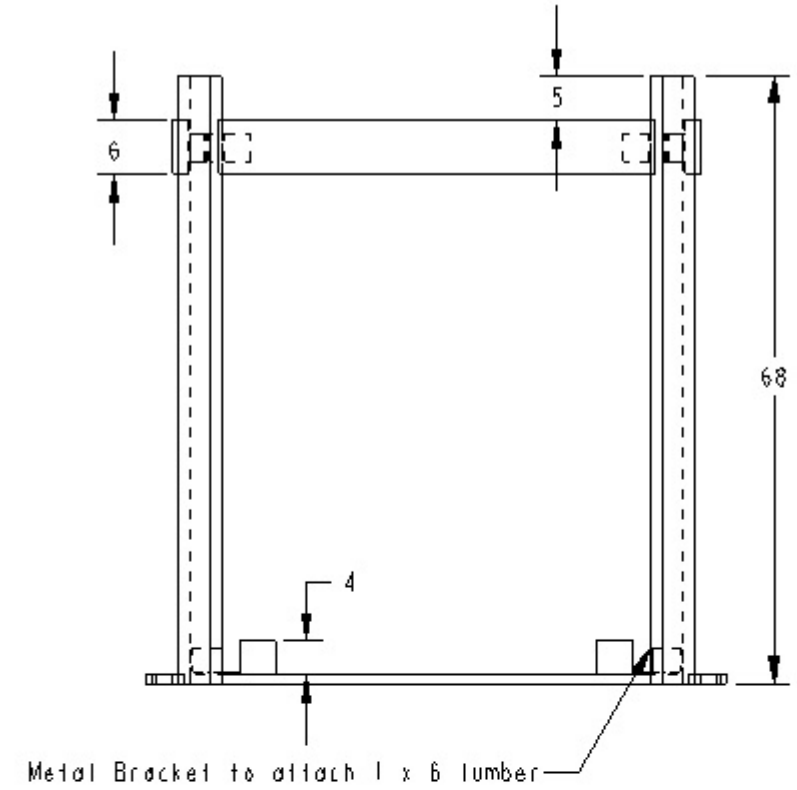


Figure 4. Lower Dunnage Assembly



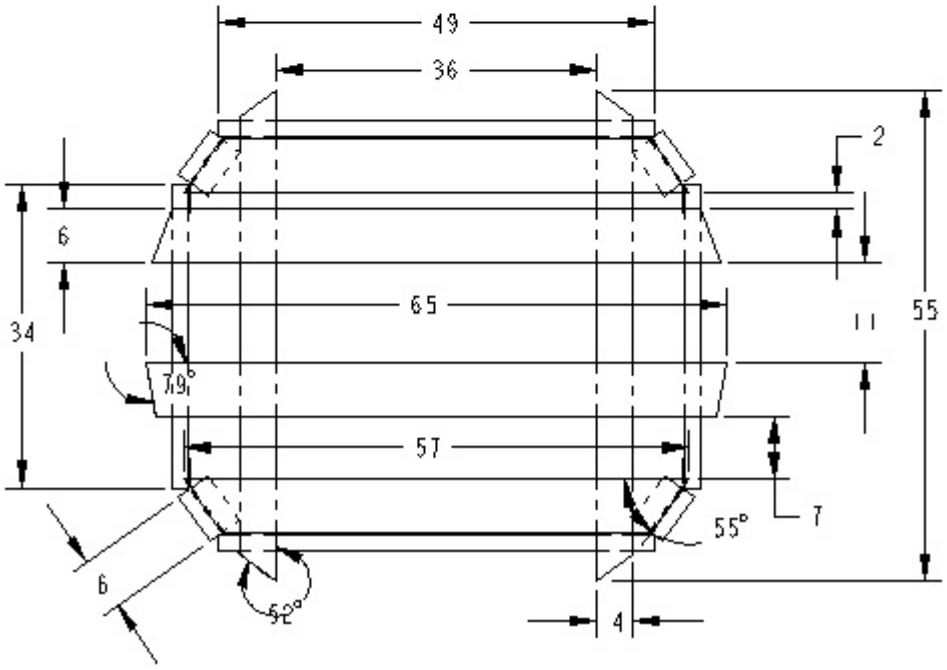
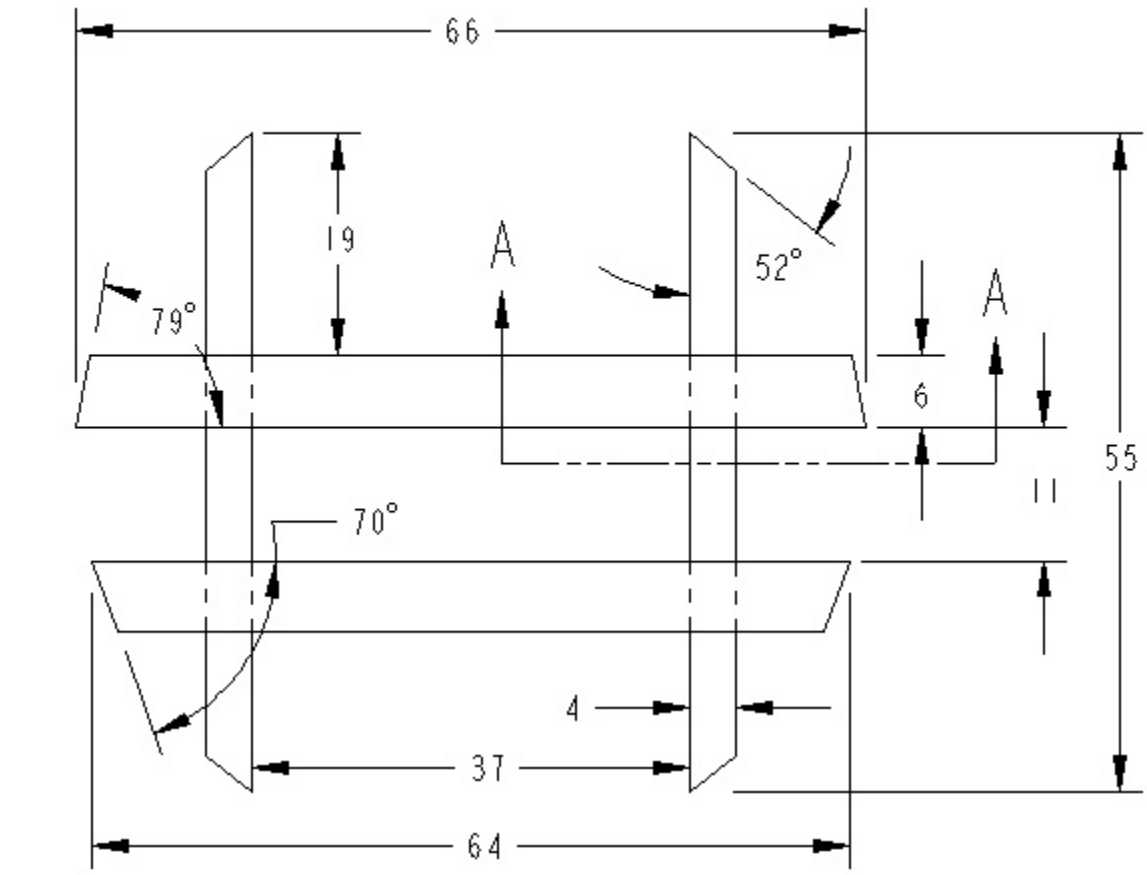


Figure 5. Upper Dunnage Assembly



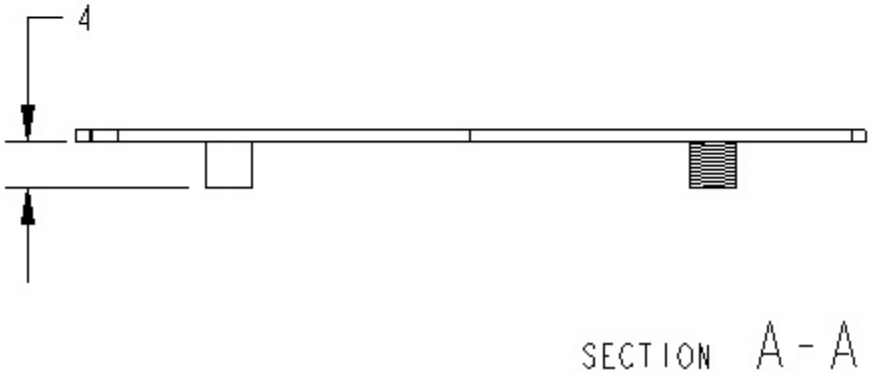


Figure 6. Dunnage Isometric Drawing